

Listing of Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A method of noncontact dispensing a conformal coating material onto a surface of a substrate comprising:

providing a positioner supporting a jetting valve comprising a ~~piston~~ valve closure element, a valve seat and a nozzle, the positioner being operable to move the jetting valve;

moving the jetting valve with respect to the substrate; and

while moving the jetting valve, applying droplets of conformal coating material to the surface of the substrate by iteratively

causing the ~~piston~~ valve closure element to engage the valve seat to cut off the flow of coating material through the valve seat, propelling to move toward the nozzle to propel a flow of the conformal coating material through the nozzle with a forward momentum, and

breaking the flow of the conformal coating material from the nozzle by using its forward momentum to form a droplet of the conformal coating material.

2. (currently amended) The method of claim 1 wherein the substrate has an electrical device mounted thereon and the method further comprises:

moving the jetting valve with respect to the substrate; and

while moving the jetting valve, applying droplets of conformal coating material to the surface of the substrate and the device by iteratively

causing the ~~piston~~ valve closure element to engage the valve seat to cut off the flow of coating material through the valve seat, propelling to move toward the nozzle to propel a flow of the conformal coating material through the nozzle with a forward momentum, and

breaking the flow of the conformal coating material from the nozzle
by using its forward momentum to form a droplet of the conformal coating
material.

3. (currently amended) A method of noncontact dispensing a conformal coating
material onto solder contacts on a surface of a substrate comprising:

providing a positioner supporting a jetting valve comprising a ~~piston~~ valve
closure element, a valve seat and a nozzle, the positioner being operable to
move the jetting valve in at least two axes of motion;

moving the jetting valve with respect to the substrate; and

while moving the jetting valve, applying droplets of conformal coating
material to the solder contacts by iteratively

causing the ~~piston~~ valve closure element to engage the valve seat
to cut off the flow of coating material through the valve seat, propelling to move
toward the nozzle to propel a flow of the conformal coating material through the
nozzle with a forward momentum, and

breaking the flow of the conformal coating material from the nozzle
by using its forward momentum to form a droplet of the conformal coating
material.

4. (currently amended) A method of applying a conformal coating material to a
surface, the method comprising:

providing a positioner supporting a jetting valve comprising a ~~piston~~ valve
closure element, a valve seat and a nozzle, the positioner being operable to
move the jetting valve with respect to X, Y and Z axes of motion;

moving the jetting valve with respect to one of the X and Y axes of motion;
and

while moving the jetting valve, creating droplets of the conformal coating
material in a first linear pattern on the surface by iteratively

causing the ~~piston~~ valve closure element to engage the valve seat
to cut off the flow of conformal coating material through the valve seat,
propelling to move toward the nozzle to propel a flow of the conformal
coating material through the nozzle with a forward momentum,
breaking the flow of the conformal coating material from the nozzle
by using its forward momentum to form a droplet of the conformal coating
material, and
applying the droplet of the conformal coating material to the surface
of the substrate.

5. (previously submitted) The method of claim 4 wherein moving the jetting valve further comprises moving the jetting valve in a first angular axis of motion about one of the X, Y and Z axes of motion.

6. (previously submitted) The method of claim 5 further comprising moving the jetting valve in a second angular axis of motion about a different one of the X, Y and Z axes of motion.

7. (currently amended) The method of claim 4 further comprising:

(a) moving the jetting valve through an increment along an other of the X and Y axes of motion;

(b) moving the jetting valve along the one of the X and Y axes of motion;
and

(c) while moving the jetting valve, creating droplets of the conformal coating material in a second linear pattern on the substrate contiguous with the first linear pattern by iteratively

causing the ~~piston~~ valve closure element to engage the valve seat to cut off the flow of coating material through the valve seat, propelling to move toward the nozzle to propel a flow of the conformal coating material through the nozzle with a forward momentum,

breaking the flow of the conformal coating material from the nozzle by using its forward momentum to form a droplet of the conformal coating material, and

applying the droplet of the conformal coating material to the surface of the substrate.

8. (original) The method of claim 7 further comprising coating an area on the surface by iterating steps (a) through (c).

9. (original) The method of claim 4 wherein applying the droplet of conformal coating material has a maximum volume of 5 nanoliters.

10. (original) The method of claim 4 further comprising iterating the steps of causing, breaking and applying at a rate of about 100 droplets per second to continuously apply the first linear pattern of conformal coating material to the substrate.

11. (original) The method of claim 4 further comprising applying a droplet to coat a maximum area on the substrate of about 200 μm^2 .